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Sustainable corporate development measured by intangible and tangible resources as well as targeted by safeguard subjects

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Abstract

The needed shift towards sustainable development in existing business processes can be achieved through the combination of the capital based approach and the life cycle sustainability assessment. This contribution performs an analysis and selection of assessment tools and indicators regarding the resources used in organisational processes and the life cycle of the products or services to measure the potential impacts on the environment and society. The relevance of intangible capital to improve the organisational sustainability performance as well as the expansion of the traditional dimensions of sustainability with the target of the six safeguard subjects: human health, social justice, ecosystem quality, financial stability, resource availability and man-made environment are integrated into a conceptual framework. This approach allows the development and implementation of strategies towards sustainable corporate development through a recommendation-based framework.

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1. Introduction

Besides the many activities that can be witnessed in corporate management the paradigm shift in existing business processes has not yet taken place in the needed intensity. One explanation might be the still dominating pressure to increase the corporate earnings year by year as well as the role of business in creating major environmental and social harm at local, regional and global scale [1], [2]. The unsustainable consumption patterns and the missing awareness of private and business consumers [3]–[8] lead to the low success of transition processes. Finally, there exists no real strategy towards sustainable development and the human as well as financial resources of small and medium sized companies are wrongly allocated to tackle the challenges related to such development [9]–[12]. Therefore, support is needed to guide

SME through the many existing tools [13], [14] and the role of policy-making should be improved to reach the goal of a sustainable corporate development [15]–[18].

Industry plays a big role in the development of societies and therefore each individual has a stake in helping enterprises to make relevant steps towards sustainable development. The authors address the capital based approach, life cycle thinking and safeguard subjects to foster corporate sustainable development (CSD). Wherein, the performance should be measured by a proper set of sustainability indicators.

In this context, the capital based approach refers to the relevance of different types of resources and makes a basic distinction between tangible and intangible resources. These are used in business processes to improve the organisational performance. The chains of organisational activities can be divided into primary, i.e. value creation processes and

secondary business processes, i.e. management and support processes.

The target, towards which the company should develop, comes usually from the normative perspective, the market and price orientation and the consumer pressure. In addition, the authors propose to take the so called safeguard subjects (often referred to as an area of protection), which are areas of high societal value [19], into account equally. This approach offers the chance to derive not only reachable goals for industry to develop in a sustainable way, but also allows us to identify cause-effect chains in a back casting style. The performance outcome can be measured and judged with respect to the following six safeguard subjects: human health, ecosystem biodiversity and resource availability from the life cycle assessment (LCA) as well as social justice, financial stability and man-made environment, as proposed by Scheumann et al. [20], to give a complete picture of a development towards more sustainable value creation.

2. Framework

A conceptual framework (Figure 1) was developed to judge the sustainability performance of enterprises, especially small and medium sized companies who do not have a specific sustainability unit in the administration. Elements from the intellectual capital statement and from the life cycle sustainability assessment are merged to determine cause-effect chains addressing six safeguard subjects.

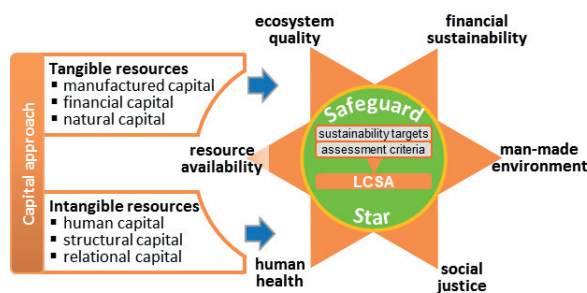


Fig. 1: Conceptual framework to combine the capital approach with the Safeguard Star

2.1. Safeguard Star

The assessment of a products' sustainability performance should be done in a consistent way and most likely in a single step called Life Cycle Sustainability Assessment (LCSA). The idea behind using a single method is to measure key sustainability issues such as the carrying capacity of the environment, the societal capital or the careful use of resources, by not separating the assessment into three single evaluations to elaborate the product performance with regard to the environment, the society and the economy. A widespread model to assess the sustainability performance of a product nowadays can be described by equation 1, which is summarised by [21]–[24]:

$$\text{LCSA} = \text{Life Cycle Assessment (LCA)} + \text{Life Cycle Costing (LCC)} + \quad (1)$$

Social Life Cycle Assessment (SCLA)

The evaluation method should be transparent with clearly defined impact pathways to highlight linkages among processes and management as well as among different safeguard subjects. The identified input and output flows are set into relation via models and cause-effect chains (or known as impact pathways) to impact categories at midpoint level to calculate the potential burden on environment, society and economy as well as the potential societal and financial benefits.

The use of the six safeguard subjects visualised as the safeguard star (right side of Figure 1), offers the possibility to avoid the risk of double counting e.g. impact on human health in LCA and potential human health consequences through socio-economic pathways in SLCA. Therefore, we propose to use the LCSA, where the three dimensions of sustainability are no longer distinguished, and combine it with the capital approach for improved decision making processes on the enterprise level.

2.2. Resource Perspective

In order to provide products or services, an organisation will combine different types of resources like human skills and knowledge, natural materials and social structures, using machinery, infrastructures and financial assets. A sustainable organisation will maintain and, wherever possible, enhance these capital assets, rather than exhausting them ("capital stewardship") [25], [26]. In turn, the set-up of the business processes constitutes the interrelation of the business operation, its resources and performance as well as the impact on the economic, social and environmental dimensions. If, for instance, economic sustainability is interpreted as an expansion of the private welfare maximisation, enterprises have to ensure the long-term functionality and effective performance of their operation. Consequently, the design of the business processes needs to be directed towards the effective, efficient and beneficial use as well as towards the development of the capital assets.

In this context, the capital based approach refers to the relevance of different types of resources and makes a basic distinction between tangible and intangible resources. These are used in business processes to improve the organisational performance. Business processes are chains of organisational activities which take one or more different resource factors as an input and create an output that is of value to the customer [27]. Tangible resources, meaning those resources that are material or substantial, are composed of financial, manufactured and natural capital [28].

Financial capital is the sum of available financial resources that are utilised to fund the organisation's operation. Thus, the product and service provisions are financially sustained through capital obtained via revenues, investments, debt, equity or grants.

Manufactured capital comprises all physical objects that are used by the organisation in order to produce and deliver its products and services. This physical part of the production system includes infrastructure and buildings, operating

equipment [28] as well as measuring, storage and transport utilities [29]. These physical objects can be obtained from third parties or in-house production.

On the basis of the classical understanding of “land” as a major factor of production, natural capital comprises all natural resources, processes and systems available [30], [28].

Differently from the International Integrated Reporting Council’s framework, which is the basis for the previous definitions of tangible resources, the definitions of the intangible resources are based on a harmonised distinction of intellectual capital (IC) factors [31]. The structural model of the intellectual capital statement (ICS) approach – a result of the consolidation process of international approaches on IC management and reporting – describes the main elements of the ICS as well as their interrelations. The model is a holistic and systemic representation of the way the organisation has structured its business processes to deliver value to the customers. Human capital (HC), structural capital (SC) and relational capital (RC) are therein used as the main categories of intangible resources.

Human capital is defined as the intangible resource employees introduce to the company. These resources are person-specific and will not necessarily be available to the organisation upon resignation of the owning employee. The expertise regarding the respective tasks and functions, gained and developed within the employee’s professional career is summarised as an employee’s ‘professional competence’. ‘Social competence’ is defined as the ability to get on well with people, communicate and discuss in a constructive manner, nurturing trust-enhancing behaviour in order to enable a comfortable co-operation. The motivation to play a part within the organisation and assume responsibilities and commitment to the fulfilment of tasks as well as the willingness for an open knowledge exchange are summed up in the definition of the IC factor ‘employee motivation’. The ability to administrate and motivate people, to develop and communicate strategies and visions as well as their empathic implementation, is a major component of the IC factor ‘leadership ability’.

Structural capital embraces all structures and processes needed by the employee in order to be productive and innovative. It “consists of those intangible structures which remain with the organisation when the employee leaves” [32]. ‘Internal co-operation and knowledge transfer’ comprises the manner how employees, organisational units and different hierarchy levels exchange information and co-operate as well as the focused knowledge transfer among employees and between generations. The management instruments that influence the decision making processes and the contained information flows are defined as the ‘leadership instruments’. The factor ‘IT and explicit knowledge’ summarises the computer assisted working environment and the explicit knowledge. ‘Product innovation’ is a highly important success factor, as the development of new products or the penetration into new markets can significantly contribute to enhance the competitiveness of an organisation. Internally, the ‘process optimisation or innovation’ includes the optimisation and improvement of internal procedures and processes. The ‘corporate culture’ contains all values and norms, influencing

joint interaction, knowledge transfer and the working manner. Compliance to rules, good manners, “Dos and Don’ts” and the handling of failures are further aspects of this factor.

Relational capital comprises all relationships to external groups and persons that are established and maintained by the organisation. The relationships to ‘former, current and future customers’ as well as the management of these relations are included in the first structural capital factor. Relationships to former, current and potential suppliers and the management of these relations are summarised in ‘supplier relationships’. ‘Relationships to the public’ include the relationships to former and potential employees, society in general and all activities of public relationship management as well as corporate citizenship. The factor ‘investor relationships’ is composed of those relations to internal and external investors – i.e. owners, stockholders, banks - and their management. All relations to professional associations, bodies, and societies and the continuous maintenance of these relations are defined as the ‘relationships to co-operation partners’.

3. Sustainability assessment, management and reporting

The assessment of the sustainability performance of an enterprise or at least of products gains in importance. The management and reporting of such sustainable development offer an advantage in competition and a better customer perception. However, at the same time a “green washing” (claiming more than actually perform) has to be avoided. For the preparation of this contribution a list of corresponding tools, methods and guidelines as in part summarised, inter alia, by Schaltegger et al. [33], was analysed. After the classification according to the intended functionality to assess, manage and report sustainable development. As in some of these tools a distinction between a focus on singular products or entire enterprises was identified the classification was expanded to include these scope-levels. Furthermore, the relation in respect to the elements of the safeguard star and the capital approach was analysed to see the practicability of our intended “marriage”. The classification reflects an average distribution across the relevant factors. As the focus of this contribution lies in the assessment, management and reporting of corporate development in regard to the introduced capital approach and safeguard subjects, a certain dynamic needs to be implied. The singular application of most assessment, management and reporting tools provides a snapshot of the corporate performance and may in exceptional cases allow a cross-enterprise assessment of comparative performance differences.

When selecting the tool to be implemented a clear understanding of the relevant mechanisms in regard to individual problem or target definitions within the corporate development needs to be established and considered. As these mechanisms are mostly bi-directional and address more than two factors, systematic procedures need to be implemented in order to screen and evaluate these relationships.

The assessment or management of the corporate development is not achieved until a cyclical dynamic is introduced, which allows the identification of the interrelations between utilisation of capital assets, the business operation and the impact in regard to the defined safeguard subjects. Once the measurement of the corporate performance of a subsequent

period is assessed in relation to previous results or defined targets, the corporate development can be evaluated. From a systems-theoretical point of view, impact mechanisms may be categorised by place, time and reflexivity [33]. Simultaneous or delayed interactions are often difficult to identify, as they may be misinterpreted as being independent or not be detected due to latency. The reinforcing, respectively debilitating mechanisms or characteristics of the systems – enterprises, organisations or networks thereof – have to be analysed to consolidate the significance of the assessment, management or reporting tool.

4. Exemplary concept application

The conceptual framework (Figure 2) has been tested in an attempt to examine and verify the impact assessment within the framework and the linkage to aforementioned assessment, management and reporting methods.

A German pilot SME has integrated the capitals and safeguard subjects in their impact assessment of the ICS as described in Figure 2. The safeguard subject “Man-made environment” was not subject to investigation because it was thought to be more appropriate in risk management. The impact between all factors was assessed, using elements of the network thinking approach and sensitivity model [34], [35] that are applied in the ICS methodology. The impact mechanisms herein can be used to identify extended priority areas of intervention or management in regard to strategic objectives of the enterprise. An extract of these impact mechanisms was selected to exemplarily apply the concept.

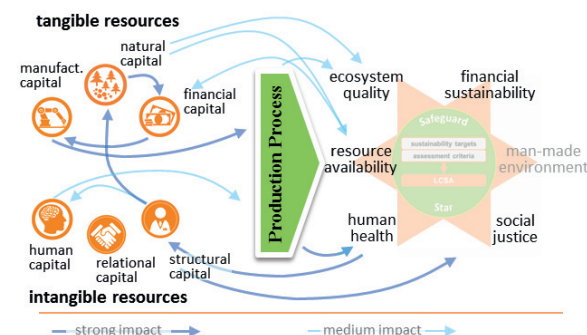


Fig. 2: Impact mechanism in pilot application of the conceptual framework

In this practical case, the production process was focused, as it is the value adding core process of this pilot SME. Furthermore, in order to provide a certain clarity-level of arrangement, only those factors having a high impact are addressed. The highlighted impacts describe a self-reinforcing loop of impact relations. In this logic, the identified vertices of this loop can be matched with the classification of the tools in regard to the capitals and the safeguard star. Those tools that show a distinctive match with the vertices of the loop are assessed as highly relevant for the particular mechanism.

Referring to the selection of tools analysed, the vertices of the impact mechanisms are matched to the classification to enable the selection of the right tool. In the example above, it is considered a rather large loop (darker shaded connections) that includes the vertices structural, natural, financial and

manufactured capital, the production processes as well as resource availability and human health. The feedback mechanisms are depicted in a lighter shade instancing secondary impact mechanisms.

Taking a closer look at the impact mechanism that includes structural and human capital and the impact via the production process on the safeguard subject human health with its feedback to relational capital and social justice, two of the referenced tools stand out. Depending on the challenge or objective, the corporate social responsible (CSR) of DIN ISO 26000 could be implemented as a reporting tool as the relation in respect to the safeguard star and the capital approach is matched and the classification of the enterprise level applies. However, with changing objectives and a further focus, the recommendation could favour the implementation of the management system within the Social Accountability (SA8000) due to the exact matching.

If the top part of the self-reinforcing loop is considered, the sustainability value added approach shows a close matching and could be utilised for the assessment and reporting. The efficiency oriented approach condenses the use of resources into a single monetary key figure [36].

Considering the focus on the product level, LCSA is a reasonable tool to apply, especially when focusing on relevant impact pathways according to the safeguard star. In the considered pilot assessment, more impact mechanisms can be taken as supplementary information to enhance ICS for decision making. The impact related to salary (fair or unfair) or working hours (above or below regional average hours) can be assessed for the products produced, where at the same time the ICS evaluates this within human capital. Both results are merged to social justice patterns and published in the companies CSR report.

5. Conclusion and Outlook

The conducted exemplary application of the conceptual framework with the starting point being the implementation of an intellectual capital statement and the evaluation of the impact mechanisms in relation to the sustainability tools, their classification in regard to the object (enterprise, product) and the relation to the conceptual framework, is a first step towards a systematic recommendation-based framework expansion. LCT in general and product assessment via LCSA helps identifying hotspots within a company (and maybe even within the supply chain) to focus on a transition towards sustainable development.

As an outlook, this approach is to be applied in further case studies to obtain more detailed information on the usability. In addition, system dynamics may reveal changes in our model over time and could be therefore a tool to check the time dependency of the hotspots identified so far. It may even contribute with additional information for better decision making.

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